

REMARKS

Claims 1-4 and 7-10, 14-15, 18 and 21-28 will remain pending in the present application, with claims 21, 22 and 24 being withdrawn.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Claim Rejections under 35 U.S.C. § 103

Claims 1-4, 8-10, 23, 25-26 and 28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zeuner US '537 (US 6,132,537). (See paragraph "1.")

Further, claims 7 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zeuner US '537 as applied above, in view of Zhou US '369 (US6,468,369) or Matsuda US '767 (US 5,780,767). (See paragraph "2.")

Further, claim 18 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Zeuner US '537 in view of Zhou US '369 or Matsuda US '767 as applied above, and further in view of Hinshaw US '703 (US 5,970,703). (See paragraph "3.")

Still, claims 1-4, 7-10, 23, and 25-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Scheffee US '571 (US 5,861,571). (See paragraph "4.")

Finally, claims 14, 18 and 28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Scheffee US '571 as applied above, and further in view of Taylor US '147 (US 6,096,147) and Hinshaw et al. US '703. (See paragraph "5.")

Nonobviousness over the Cited References or the Combination thereof

As recited in claim 1, the present invention is directed to a gas generating composition for an air bag inflator comprising: (a) melamine cyanurate as a fuel in an amount of 10 to 60% by mass; and (b) at least one oxygen-containing oxidant selected from the group consisting of basic copper nitrate, basic cobalt nitrate, basic zinc nitrate and basic manganese nitrate.

Features of the present invention are that the gas generating composition contains melamine cyanurate as fuel in an amount of 10 to 60% by mass, and that the melamine cyanurate is employed with the claimed oxygen-containing oxidant.

The Examiner cites the primary reference Zeuner US '537 alone or in combination with the secondary references (*i.e.*, Zhou US '369, Matsuda US '767 and Hinshaw US '703) against the claims (see paragraphs "1." to "3." of the Office Action). Further, the Examiner cites the primary reference Scheffee US '571 alone or in combination with the secondary references (*i.e.*, Taylor US '147 and Hinshaw US '703) against the claims (see paragraphs "4." to "5." of the Office Action).

However, the primary references (Zeuner US '537 and Scheffee US '571) fail to disclose or suggest features of the present invention such as employment of melamine cyanurate.

In this regard, the Examiner alleges that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use melamine cyanurate since Zeuner US '537 discloses that melamine and cyanuric acid and their salts can be used and since melamine cyanurate is a salt of melamine and cyanurate acid (see paragraph "1." of the Office Action). Further, the Examiner alleges that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use melamine cyanurate since Scheffee US

‘571 discloses that melamine, cyanuric acid and their derivatives can be used and since melamine cyanurate is a derivative of melamine and cyanurate acid (see paragraph “4.” of the Office Action).

However, Applicants respectfully submit that the Examiner’s conclusion of obviousness is based on improper hindsight reasoning. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). The Examiner must interpret the reference as a whole and cannot pick and choose only those selective portions of the reference which support the Examiner’s position. *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988)

In Zeuner US ‘537, it is essential that a guanidine compound is employed with other component (see claim 1 at column 5). Zeuner US ‘537 fails to disclose or suggest that melamine cyanurate is employed. Further, at best, Zeuner US ‘537 merely discloses a melamine and a cyanuric acid in the long list (*i.e.*, the laundry list) (see paragraph bridging columns 1 and 2), but fails to disclose or suggest even that a melamine is employed with a cyanuric acid.

Further, melamine cyanurate is generally used as a fire-retardant. Thus, one skilled in the art is not motivated by Zeuner US ‘537 to use solely melamine cyanurate as a fuel. Rather, one skilled in the art is taught away from employing melamine cyanurate as a fuel. As such, there is no rationale for one skilled in the art based on Zeuner US ‘537 to arrive at the present invention where melamine cyanurate is employed as a fuel.

Similarly, Scheffee US ‘571 also fails to disclose or suggest that melamine cyanurate is employed. Further, in Scheffee US ‘571, use of a strong oxidizing agent such as ammonium

perchlorate is essential. Scheffee US '571 does not provide any suggestion to employ the oxidizing agent (*e.g.*, basic nitrate) of the present invention with melamine cyanurate.

Incidentally, the secondary references (*i.e.*, Zhou US '369, Matsuda US '767, Hinshaw US '703, and Taylor US '147) also fail to disclose or suggest such features of the present invention.

Therefore, there is no rationale and reasonable expectation of success based on the primary references (*i.e.*, Zeuner US '537 and Scheffee US '571) alone or in combination with the secondary references for one skilled in the art to arrive at the present invention. Thus, the present invention is not obvious over the cited references alone or in combination thereof.

Furthermore, the present invention produces advantageous results that are in no way rendered obvious by the cited references of record. For example, the present invention exhibits advantageous properties in connection with the combustion temperature and heat content. Data in connection with melamine, cyanuric acid, and melamine cyanurate are shown below.

Components (a relative proportion where oxygen balance is zero)	Combustion Temperature	Heat Content
Melamine/BCN (20.80/79.20wt%):	1503K	409.3cal/g
Melamine Cyanurate/BCN (26.16/73.84wt%):	1348K	357.7cal/g
Cyanuric acid/BCN (34.97/65.03wt%):	1176K	301.0cal/g

BCN: Basic Copper Nitrate

From the above data, with cyanuric acid, the combustion temperature is so low that a great amount of a gas generating agents is required in order to obtain enough pressure for expansion of an air bag. Consequently, an inflator becomes heavier when cyanuric acid is

employed. Further, with melamine, the combustion temperature is so high that more coolant is needed. Thus, an inflator becomes heavier when melamine is employed.

In contrast, when melamine cyanurate is used, the combustion temperature is within an ideal range so that no coolant and no excessive amount of a gas generating agent are required. (See also Example 1 as disclosed at pages 13 and 14 of the instant specification.) As a result, the weight of an inflator can be low.

In addition, when melamine cyanurate is employed, a volume of an inflator can be kept smaller and lighter than when melamine and cyanuric acid are simply mixed and employed in an inflator. Further, in general, a salt of melamine and cyanuric acid is formed by exothermic reaction. In the present invention, because melamine cyanurate is employed, the salt is formed in advance (in other words, exothermic reaction is omitted). Thus, heat generation at the time of combustion is suppressed, compared with the case where a mere mixture of melamine and cyanuric acid were employed.

As explained above, the present invention exhibits advantageous and unexpected properties. Thus, even if a *prima facie* case of obviousness has been properly alleged, such obviousness has been rebutted by the unexpected and advantageous properties as discussed above. Although Applicants submits that all claims are allowable for the reasons stated above, the Examiner is requested to give separate consideration to claims 9, 10, 14, 15, 18, 21, 22, and 28, which all specify that Component (b) is basic copper nitrate (BCN) in view of the data reported above for BCN and melamine cyanurate.

Accordingly, the present invention (independent claim 1 and dependent claims thereon) is not obvious over the cited references since the cited references fail to disclose or suggest the present invention and further the present invention has advantageous results as explained above.

CONCLUSION

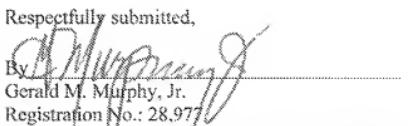
Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to withdraw the rejections and to issue a Notice of Allowance clearly indicating that each of the pending claims is allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Toyohiko Konno, Reg. No. L0053 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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